REMARKS

Claims 1-5 have been examined. The Examiner has objected to claims 2-5 as being dependent upon a rejected base claim, but has indicated these claims would be allowable if rewritten in independent form. Applicants have rewritten claims 2 and 3 in independent form and should be allowed. Claims 4 and 5 depend on claim 3 and also should be allowed.

Applicants are amending the specification and the abstract of the disclosure to correct grammatical and typographical errors. Applicants are also amending claim 1 to further clarify the claim. Applicants are also adding new claims 6-9. Claims 1-9 are all the claims pending in the application.

Rejection of Claim 1 under 35 U.S.C. § 103(a) – Sanders and Shoda

The Examiner has rejected claim 1 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,263,188 (hereinafter Sanders) in view of U.S. Patent No. 5,177,801 (hereinafter Shoda). Applicants respectfully traverse this rejection.

Sanders and Shoda, individually or in combination, fail to teach or suggest the fade volume computing unit of claim 1. In particular, the prior art fails to teach or suggest moving the balance point from a prescribed position without a decrease in the overall volume within a vehicle.

Fader 31 of Shoda that allegedly corresponds to the fade volume computing unit of claim 1 fails to perform the above-mentioned functions. Rather fader 31 of Shoda is nothing more than

a conventional fader that mixes signals from an A and B bus. (Col. 3 of Shoda). As allegedly shown in Figure 4 of Shoda, fader 31 fades in or out the audio signals of a channel in preset or program mode.

Shoda is silent as to recognizing the problem addressed by Applicants' volume controller. No mention is made of moving the balancing point within a vehicle or room and it is indisputable that fader 31 of Shoda does not perform the functions recited in claim 1.

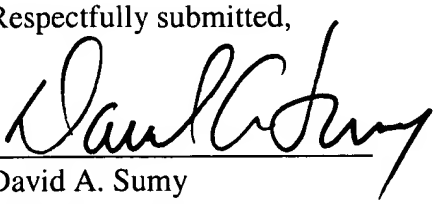
For at least these reasons, the rejection of claim 1 should be withdrawn. Since new claims 6-9 depend on claim 1, these claims are patentable at least by virtue of their dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Paragraph bridging page 5 and page 6:

In Fig. 1, reference numeral 10 denotes a preset attenuation value recording unit for recording a preset attenuation value described later, 11 a loss recording unit; and 12 a fade volume computing unit for computing a signal amplifying factor (described later) on the basis of the preset value recorded on the preset attenuation value recording unit 10, an attenuated amount recorded on the loss recording unit 11 and a movement ("fade") of a balancing point from the center to the front or rear side inputted ~~form~~from the fade input unit. Reference numeral 13 denotes an entire volume input unit for controlling the volume of the signals reproduced by the front left speaker (SFL)4, front right speaker (SFR)5, rear left speaker (SRL)6 and rear right speaker (SRR)7. Reference numeral 14 denotes an individual volume input unit for individually controlling the volume of the signal reproduced by each of the front left speaker (SFL)4, front right speaker (SFR)5, rear left speaker (SRL)6 and rear right speaker (SRR)7. Reference numeral 15 denotes the fade input unit for setting the above "fade" in the conventional volume controller as shown in Fig. 3. Reference numeral 16 denotes a control unit. Reference numeral 17 denotes an interface (I/O) for supplying various values to the attenuators 8TFL , 8TFR, 8TRL and 8TRR under the control by a processor (CPU) 18. Reference numeral 18 denotes the processor for executing the control processing for the preset value recording unit 10, loss

recording unit 11, fade volume computing unit 12, entire volume input unit 13, individual volume input unit 14, fade input unit 15 and control unit 16.

Paragraph bridging page 9 and page 10:

In Equation (10), $(K + k_{FL})$, $(K + k_{FR})$, ~~$(K + k_{FL})$~~$(K + k_{RL})$, and $(K + k_{RR})$, as explained in connection with Equation (2), have been recorded as ~~TFT~~TFL, TFR, TRL and TRR in the preset value recording unit 10. L_1 and L_2 have been recorded in the loss recording unit 11. If the movement of a balancing point from the center to the rear side (the signal for the front speaker is attenuated by the attenuating factor K_F ($K_F > 1.0$) is supplied from the fade input unit 15, the ~~face~~fade volume computing unit 12 read the data from the preset value recording unit 10 and the loss recording unit 11 to execute the operation of Equation (10), thereby computing k_R.

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k1 of an input signal for providing an increased volume at the rear or front speaker ~~by the volume at a prescribed position within a vehicle~~ which is equal to ~~an~~a decreased volume ~~in~~at the front or rear speaker when ~~a~~an input signal ~~supplied to the front or rear speaker~~ is attenuated by an attenuating factor

K1, so that when a balancing point is moved from a prescribed position, a total volume within the vehicle is unchanged; and

a control unit for multiplying the signal supplied to the rear or front speaker by k1 when ~~a~~the input signal supplied to the front or rear speaker is attenuated by K1.

2. (Amended) A volume controller ~~according to claim 1,~~ for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k1 of an input signal for providing an increased volume at the rear or front speaker by the volume at a prescribed position within the vehicle which is equal to a decreased volume in the front or rear speaker when a signal supplied to the front or rear speaker is attenuated by an attenuating factor K1; and

a control unit for multiplying the signal supplied to the rear or front speaker by k1 when a signal supplied to the front or rear speaker is attenuated by K1;

wherein the prescribed position is located at a center of a front seat, at a center of a rear seat, or a center between the front seat and the rear seat.

3. (Amended) A volume controller ~~according to claim 1,~~ for controlling volume balance between a front speaker and a rear speaker located within a vehicle, comprising:

a fade volume computing unit for computing an amplifying factor k1 of an input signal for providing an increased volume at the rear or front speaker by the volume at a prescribed

position within the vehicle which is equal to a decreased volume in the front or rear speaker when a signal supplied to the front or rear speaker is attenuated by an attenuating factor K1; and

a control unit for multiplying the signal supplied to the rear or front speaker by k1 when a signal supplied to the front or rear speaker is attenuated by K1;

wherein attenuations when acoustic waves from the front speaker and rear speaker are propagated to the prescribed position are previously recorded, and on the basis of the attenuations, the increased and decreased volumes at the front or rear speaker are computed.

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

A volume controller for controlling volume balance between a front speaker and a rear speaker located within a vehicle, includes a fade volume computing unit for computing an amplifying factor k1 of an input signal for providing an increased volume at the rear or front speaker by the volume at a prescribed position within the vehicle which is equal to ~~an~~a decreased volume in the front or rear speaker when a signal supplied to the front or rear speaker is attenuated by an attenuating factor K1; and a control unit for multiplying the signal supplied to the rear or front speaker by k1 when a signal supplied to the front or rear speaker is attenuated by K1. In this configuration, a volume controller can form an acoustic field with a sense of realism when volume adjustment is preformed in a to-and-fro direction.